

# **STEP-BY-STEP**

**2nd Ed.**

## **A GUIDE TO MOBILITY TECHNIQUES**

### **INTRODUCTION AND APPENDICES**

**By Sandra Rosen, Ph.D.**

# TABLE OF CONTENTS

Acknowledgements .....	3
Introduction .....	5
Appendix A About the Prerequisite Matrix .....	13
Appendix B Cane Placement and Measuring the Long Cane .....	15
Cane Placement .....	16
Measuring the Long Cane.....	20
Appendix C Glossary .....	23
Appendix D Video and Other Credits.....	44
Appendix E Modules in the Step-By-Step Series.....	46

# ACKNOWLEDGEMENTS

Step-By-Step started off as a project designed to benefit the students in the Orientation and Mobility Program at San Francisco State University. These students, like all orientation and mobility (O&M) students, were charged with learning and demonstrating mobility techniques in a variety of environments, including very busy intersections, all while wearing a sleep shade over their eyes. It was clear that for some students, simply reading about a technique or seeing it quickly demonstrated prior to performing it in the real environment did not give them what they needed in order to most easily or most comfortably learn the nuances of performing the technique. This need also extended to teaching the various skills of analyzing someone's performance of that technique before they had the responsibility of teaching a classmate who was wearing a sleep shade. The need for an instructional database that provided a full-motion demonstration of skills that could be viewed, studied, reviewed, and kept for future reference became clear.

Step-By-Step has, indeed, been a long time in coming. What started as a relatively simple project to develop a CD of instructional videos on mobility skills grew to be a seven-module series of instructional videos, comprehensive study guides, pictorial review guides, and more.

Step-By-Step was definitely not a one-person achievement. San Francisco State University students served as actors in the video clips and shared their perspectives in the development of the written materials. O&M university professionals throughout the United States identified the final techniques and skills that would be included in the product. All of these special colleagues deserve credit and have my undying gratitude.

I especially want to thank Kevin Kelly, the most talented instructional technology specialist I have ever met. Kevin spent countless hours working with me as I endeavored to learn just enough computer programming using Adobe Director software to produce the videos. Kevin not only helped me learn enough computer programming basics to develop the Step-By-Step computer framework and finish the project, but he filled in the blanks with the high-level lingo that only a professional can write. Recently, Adobe Director software reached its end of life, as the professionals say. This provided the impetus to revise Step-By-Step using Adobe Captivate Software. While, due to budget constraints, the videos could not be re-recorded, Step-By-Step now has a new updated user interface, and it was possible to update many of the supplementary materials with additional information.

Despite the years of work filled with emotional highs, lows, and countless frustrations, developing this product has been an experience both profound and wonderful. People from around the world provided encouragement and constructive criticism and kept the faith, despite myriad technological setbacks. It is to all of you, who encouraged me to

not give up when faced with ongoing delays and obstacles to completion and publication, that I dedicate Step-By-Step. I also dedicate Step-By-Step to all of my colleagues throughout the world, in countries as far away as China, Germany, Egypt, Switzerland, Australia, and Israel, who expressed sincere interest in incorporating Step-By-Step into instruction in their own countries.

Thank you to everyone for helping to make Step-By-Step a reality.

— Sandra Rosen

# INTRODUCTION

The ability to travel independently is a basic aspect of human existence. Inherent in almost everything we do in life is the act of moving from one place to another in our environment. Whether it is a short distance, such as from the refrigerator to the table, or a long distance, such as taking a bus ride or an airplane trip, most activities in life involve travel. In fact, a limitation in independent movement has been shown to be one of the most basic barriers to a person's social and economic functioning (McDonnall, 2011).

Travel, no matter how short or long, involves three things: (a) the formulation of a travel route and plan for getting from a starting point to a destination, (b) the processing of sensory information to continually update our position in the environment as we move, and (c) motor skills to physically travel from point A to point B. Each one of these things is intricately related to the other two. The first two elements, in particular, are the key contributors to what is known as orientation. Orientation refers to the ability to establish and monitor one's position and movement in space using available sensory information. Without a plan for getting from our starting point to our destination, we are likely to wander aimlessly in space only to arrive at the destination by chance. Sensory information, in turn, tells us where we are in relation to objects in our environment. As we move from point A to point B, we process changes in the incoming sensory information in order to continually update our position in the environment and to plan the remainder of our travel to point B. This processing of sensory information relies on our visual, tactual, auditory, proprioceptive, kinesthetic, and, sometimes, olfactory senses. For people with sight, the vision sense arguably provides the richest source of information. This is particularly true for features of the environment that are beyond arm's reach. Sight is supported by auditory and olfactory information that can help identify the location of specific objects or places in the environment, such as an idling vehicle or the bakery we are passing. The tactual, proprioceptive, and kinesthetic senses provide information on features of the environment with which we are in immediate contact, such as the door handle we are turning or the slanting sidewalk on which we are traveling.

The third item, physically moving from point A to point B, constitutes travel. When performed by a person with a visual impairment using specialized techniques to ensure safe and effective movement through the environment, it is called mobility. There are many techniques that people who are blind use to travel safely and efficiently. These techniques, along with the type of instruction provided in O&M, may vary depending upon the traveler's age; amount of functional travel vision; sensory, cognitive, spatial, and physical ability; the travel environment (e.g., indoor versus outdoor, familiar versus unfamiliar, controlled versus uncontrolled); and even personal preference. Primary mobility systems include several modes: guiding, long canes, and dog guides. Also, there are secondary mobility devices that may be used along with these, including such things as visual aides (e.g., monoculars and sunglasses) and non-visual aids (e.g.,

visors or baseball caps to shield the eyes from glare). Aids also include phone apps and a variety of electronic devices that use ultrasound, laser, infrared, beacon, and GPS technology. In addition, some travel situations, such as moving around a familiar house or building, may not involve using any of the above aids, but may be done solely by using specific non-cane mobility techniques designed to ensure safety and provide some environmental information for orientation. There are many aspects to independent travel by people without vision, and many books have been written about selected aspects of O&M. Step-By-Step specifically focuses on travel skills using a long cane, a guide, and selected non-cane techniques used by travelers who do not possess functional vision.

University-based professional preparation of O&M specialists began in 1960 with the opening of Boston College's program in orientation and mobility. Since then, colleges and universities throughout the United States and other countries have prepared O&M specialists to serve people with visual impairments. One such program at San Francisco State University held a symposium in February 1993 to bring university faculty in O&M together to share the methods of performing mobility techniques that they each teach at their respective universities and colleges. In this symposium, participants demonstrated their individual methods for performing each technique and, as a nationally representative group, came to a general consensus on acceptable standards and alternative methods for performing techniques. While the techniques presented in Step-By-Step do not represent all possible variations, they do include those that were generally endorsed by this nationally representative group, as well as a variety of other methods.

## **What Is the Step-By-Step Series?**

Step-By-Step is a seven-module series designed to demonstrate the mechanics of performing common mobility techniques. It is intended primarily for use by college and university students who are learning to be O&M specialists.

Step-By-Step can also serve as a review tool for O&M specialists who wish to refresh or update their skills following an absence from the field. Selected modules are also of interest to teachers of the visually impaired, vision rehabilitation therapists, and other professionals who are serving people with visual impairments and who may be called upon to teach or reinforce selected mobility techniques, such as Guiding and Non-Cane techniques. Some modules may even be of interest to any and all who simply wish to know more about independent travel techniques used by people who are blind. For example, those who work, live, or recreate with people who are blind may wish to learn guiding skills, not for the purpose of teaching these skills but, rather, to become more effective guides themselves.

Step-By-Step does not cover all mobility skills or environmental situations, nor does it attempt to be an authoritative volume on teaching strategies and lesson-planning. At

the time that Step-By-Step was first developed and the skills were videotaped, research was just beginning or underway on aspects of O&M, such as using accessible pedestrian signals (APS); crossing at roundabouts; identifying “situations of uncertainty” (Sauerburger, 2005); the impact of quiet cars on a traveler’s ability to cross the street safely; as well as using rideshare, taxi, or similar services (e.g., Uber, Lyft). The reader is referred to other publications for more detailed information about these aspects of travel. Instead, Step-By-Step focuses on the foundational elements of travel encountered by travelers in most situations, and it strives to provide important information in a format that is easy to read and retrieve down the road whenever it is needed.

The modules available in Step-By-Step are:

- Guiding Techniques—traveling with another person
- Non-Cane Techniques—traveling without a cane
- Special Techniques—searching for a dropped object, etc.
- Long Cane Techniques—traveling with a long cane
- Environment-Specific Techniques—negotiating environments that have unique features (e.g., revolving doors, escalators)
- Street Crossing Techniques—crossing at intersections of varying shapes and sizes and in the presence of a variety of traffic patterns and controls
- Transportation Techniques—automobile, bus, and subway travel

## **What Are the Components of the Step-By-Step Series?**

The Step-By-Step series comprises two flash drives with interactive videos, the User Guide, study guides, review guides, a series of appendices (included in this document), and the Prerequisite Matrix.

### **Flash Drives**

Step-By-Step contains two flash drives, each containing selected modules in the series.

- Flash Drive “SBS 2Ed Pt 1” contains the interactive computer program related to the following instructional modules: Guiding Techniques, Non-Cane Techniques, and Special Techniques. Flash Drive “SBS 2Ed Pt 1” also contains the User Guide, a series of appendices (included in this document), the study guides and review guides related to these selected modules, and the Prerequisite Matrix.
- Flash Drive “SBS 2Ed Pt 2” contains the interactive computer program related to the following instructional modules: Long Cane Techniques, Street Crossing Techniques, Transportation Techniques, and Environment-Specific Techniques. Flash Drive “SBS 2Ed Pt 2” also contains a user guide, a series of appendices (included in this document), the study guides and review guides related to these selected modules, and the Prerequisite Matrix.

## **Review Guides**

The Step-By-Step review guides provide information on how to perform the techniques in an easy-to-follow, step-by-step outline format that makes the techniques simple to learn and provides a quick reference outline for later review.

Each technique is organized by key points that describe each step involved in performing the technique; each key point is accompanied by one or more photographs that depict a traveler performing that step. The review guides are designed for use by university students and professionals who have already learned the mobility techniques and who wish to have a quick-reference guide to review the steps or components of a technique prior to taking a test or working with a student during an internship experience. Similarly, professionals who have not taught a specific technique in a long time will find the review guides a useful refresher prior to teaching the technique to a new traveler.

## **Study Guides**

The Step-By-Step study guides provide a detailed, step-by-step description of how to perform each mobility technique within the module. The presentation of each mobility technique is more comprehensive in the study guides than is possible in the interactive videos. For example, they offer additional information on instructional strategies, identify prerequisite and related skills, include considerations for selecting appropriate teaching environments, offer modifications for travelers who have special needs, and include teaching tips and other information geared for professionals who are learning to teach O&M skills to people who have visual impairments. They also provide information on skills that could not be included in the interactive videos because of budget limitations at the time the videos were originally recorded (e.g., taking elevators, crossing railroad tracks).

While, due to space limitations, it is not possible to provide an in-depth discussion of the unique aspects of teaching orientation skills and independent travel to children, the elderly, or people who have low vision or multiple disabilities (each of these areas could warrant a book on its own), the study guides do include some modifications and alternative approaches to performing the technique whenever appropriate. Hopefully, these suggestions will serve as a starting point for creative problem-solving when working with a learner with special needs or preferences.

The presentation of each technique within the study guides is organized as follows:

### **Name of the Technique**

The name given for each technique is that which is commonly used in the field of orientation and mobility. When appropriate, descriptions of the name are added for clarification. When there is more than one way in which to perform a technique, it is divided into sub-skills that are given descriptive names.



## **Purpose of the Technique**

A concise statement of the purpose gives the rationale for and primary use of each technique.

## **Prerequisite Techniques**

This section provides a list of prerequisite techniques that are necessary for optimal mastery of the target technique; only the most relevant prerequisite techniques are listed here. Techniques that are, in themselves, prerequisite for one of the prerequisite techniques are not included in the list. For a more comprehensive listing of all prerequisite techniques, the reader is referred to the Prerequisite Matrix, described in Appendix A of this document.

In addition, some techniques listed in the Prerequisite Techniques section are actually not true prerequisites; rather, they serve as a foundation to make it easier or more efficient for the student to develop the target skill and for the instructor to teach it. For example, it is not technically necessary for the traveler to know how to reverse directions with a guide in order to learn how to travel with a guide on stairs. Knowing this technique, however, can make it more efficient for the traveler and guide to turn around on a narrow landing if they need to return down the staircase just climbed. Such techniques are indicated by a footnote that explains their function in teaching and learning the target technique.

## **Teaching Environments**

This section covers environmental features to consider when choosing areas in which to teach a specific technique. Choosing the optimal teaching and learning environment involves identifying salient environmental features that will facilitate instruction of a new technique. It also focuses on choosing environments that will provide opportunities to practice and refine the technique, culminating in its use in the natural environment. Having said this, however, teaching mobility often requires people to work in areas that are available, even if not ideal. Furthermore, not all travelers will need or want to travel in all of the listed teaching environments. For this reason, the teaching environments in this section are given as recommendations, not as absolute requirements.

## **Methods**

This section gives a step-by-step description of how to perform the technique. When there is only one way in which to perform a technique, it is entitled "Standard." When there is more than one way to perform a technique, it is subdivided into units referred to as "Skills" or "Methods" and entitled in a way that describes the most salient feature/s. When there is more than one way in which to perform a technique, a brief rationale is given for the use of each particular skill or method, along with other information that may be of interest to the reader.

The reader will notice that some methods are comprised not of sequential steps but of components that are performed simultaneously. When this is the case, each component is given a name that reflects its most salient feature.

### **Modifications**

While it is not possible to describe all skill modifications in this series, some simple modifications are given for travelers who have low vision or who have special needs. At times, these modifications are given directly below the step in the technique to which they apply. When a modification can be applied to a skill as a whole, it is listed in a separate section entitled "General Modifications."

### **Errors and Corrections**

This section provides a description of some of the most common errors that travelers and guides make when first learning a new skill or technique. Each error description is followed by a description of the needed correction and its rationale.

### **Notes for Teachers**

This section provides additional information, including items of interest about the technique, social considerations in use of the techniques, and some teaching tips. The teaching tips that are provided may not be appropriate for every learner, nor do they represent a comprehensive listing. Rather, they are intended to provide suggestions to help the new teacher get started in developing his or her own teaching strategies.

### **Related Techniques**

Related techniques are those for which the target technique is a prerequisite or those that may use the target technique in their performance. For example, crossing a street incorporates use of the target TOUCH Technique. BASIC CROSSING is, therefore, considered to be a related technique to TOUCH technique.

As with prerequisite techniques, only the most relevant related techniques are listed here. For a comprehensive listing of all related techniques, see the prerequisite matrix described in Appendix A.

## **Appendices**

Located in the next section of this document, the Step-By-Step appendices provide additional resources, such as a matrix showing prerequisite and related techniques for each technique included in the series. The appendices also include a Glossary of terms used in the series, special sections on how to store the cane properly when it is not in use, and suggestions on how to measure the proper length of a long cane for use by a specific traveler.

## Final Words of Introduction

It is important to note that the order in which modules and techniques are presented in the Step-By-Step study guides are not intended to infer any form of instructional sequence. Not all travelers learn techniques in the same order during the course of instruction.

Throughout the Step-By-Step series, the term “traveler” is used to refer to a person with a visual impairment who is learning and/or performing the mobility technique/s discussed. The term “guide” refers to a person acting as a guide. This might be the O&M specialist, teacher, rehabilitation professional, health care worker, family member, or anyone else who is guiding the traveler.

Whenever the name of another technique within the series is mentioned, it is printed in all capital letters to highlight it for the reader.

To avoid the use of gender-biased language, gender-specific pronouns for traveler and guide vary to match the photographs that demonstrate key components of each technique. Users of Step-By-Step: A Guide to Mobility Techniques will also find that the gender designations assigned in the study guides match those of the traveler and guide in the Step-By-Step video clips.

As is the nature of any text on O&M, Step-By-Step is not a stand-alone tutorial on how to be an O&M specialist. Rather, it is intended for use as part of a comprehensive college or university program that prepares O&M professionals, teachers of the visually impaired, vision rehabilitation therapists, and other vision professionals to teach the selected mobility skills commonly taught by each profession.

## References

- McDonnall, M. C. (2011). Predictors of employment for youths with visual impairments: findings from the second national longitudinal transition study. *Journal of Visual Impairment & Blindness*, 105(8), 453–466.
- Sauerburger, D. (2005) Street-Crossings: Analyzing Risks, Developing Strategies, and Making Decisions. *Journal of Visual Impairment & Blindness*, 99(10), 659-662.  
<https://www.sauerburger.org/dona/JVIBrisk.html>

# **APPENDICES**

# APPENDIX A

## ABOUT THE PREREQUISITE MATRIX

The Prerequisite Matrix, described here, is provided as a separate PDF on each flash drive.

There is not a specific order in which travelers learn mobility techniques; the order depends upon a number of factors. These factors include such things as a person's immediate travel needs, whether or not the traveler has acquired the prerequisite skills to learn a specific technique, and the types of environments in which the person wishes to travel.

The Prerequisite Matrix included on the flash drives provides a visual overview of techniques that are either prerequisite to or can be used concurrently with the technique to be taught. This matrix is not intended as a guide that dictates the order in which to teach mobility skills. Rather, once the O&M specialist has considered the factors mentioned above and has identified the technique/s to be taught, the matrix provides a quick checklist of techniques that can enhance the learning process.

As shown in the table on the next page, there are three different situations in which one technique might be considered to be prerequisite to another. Each one is identified by a letter that corresponds to its identification on the matrix.

### Notes:

- By reading across a row, the user can identify those techniques that are prerequisite to the target technique.
- By reading down a column, the user can identify those techniques to which the target technique is prerequisite.

## Matrix Key

Letter	Meaning
<b>P</b>	<p>Knowing this technique is a prerequisite to learning the target technique.</p> <ul style="list-style-type: none"> <li>For example, "BASIC GUIDING—When the Traveler Is Not Carrying a Cane" is prerequisite to "BASIC GUIDING—When the Traveler Is Carrying a Cane."</li> </ul>
<b>U</b>	<p>Although not essential, knowing this technique (or a specified portion of it) may be useful in the following ways:</p> <p>It may be useful in learning at least one method or modification of the target technique.</p> <ul style="list-style-type: none"> <li>For example, a variation of the DIAGONAL technique is used in the Diagonal skill within the BASIC GUIDING (When the Traveler Is Carrying a Cane) technique.</li> </ul> <p>It may make the teaching process easier. Here are some examples:</p> <ul style="list-style-type: none"> <li>The contacting objects portion of the CONTACTING &amp; EXPLORING OBJECTS technique is used in the BASIC (Street) CROSSING technique in negotiating the destination up-curb.</li> <li>A variation of the TRAILING technique can be used in TRANSFERRING SIDES.</li> <li>REVERSING DIRECTION—With a Guide (When the Traveler Is Not Carrying a Cane) enables the traveler and guide to turn around on a landing in order to travel back on the same stairway that they just ascended or descended.</li> </ul> <p>It may make learning the target skill less intimidating.</p> <ul style="list-style-type: none"> <li>For example, learning to negotiate ESCALATORS—with a Guide (When the Traveler Is Carrying a Cane) may provide the traveler with a helpful experience before she learns to negotiate ESCALATORS independently.</li> </ul>
<b>C</b>	<p>This technique may be used in conjunction with the target technique, depending on the specific environmental circumstances. For example, a traveler who is not using his cane may use the LOWER HAND &amp; FOREARM technique in conjunction with the TRAVERSING OPEN SPACES technique in a controlled, familiar environment to detect a table in his travel path.</p>

# **APPENDIX B**

## **CANE PLACEMENT AND MEASURING THE LONG CANE**

# CANE PLACEMENT

## Purpose

To position or store the cane so that it is easily accessible and out of the way of other people

## Prerequisite Techniques

None

## Teaching Environments

Begin in a quiet, familiar area with places in which a cane can fit easily (e.g., on a hook; under a chair, bench, or couch).

Progress to unfamiliar and crowded areas with a variety of seating arrangements and in which the cane sometimes cannot fit easily (e.g., cars, buses, restaurant booths, auditorium seating, circular tables).

## Methods

### Straight Canes

#### When Seated for a Short Period of Time

1. The traveler can place the cane tip between his feet and hold the vertical shaft securely between his knees while holding onto the crook or the shaft with one hand to keep the cane from slipping out of position and contacting objects or other people inadvertently.
  - Alternatively, the traveler can place the cane tip securely between his feet, gently hold the cane shaft between his knees, and allow the upper shaft or grip to rest against his shoulder.



## **When Seated for a Longer Period of Time**

The size, shape, position, and arrangement of the seats will determine which technique the traveler will use for storing the cane.

### **In a chair**

1. The traveler uses the technique detailed in the section "When Seated for a Short Period of Time," above.

### **On a bench or sofa**

1. The traveler places the cane under the bench or sofa either parallel or diagonal to its length. The crook of the cane faces under the bench or sofa so that passersby won't trip on it.
  - The traveler may find it helpful to keep one foot on the cane and/or place the crook (if there is one) around the leg of the bench or sofa. This helps to prevent the cane from rolling and will also make it easier to locate later.

### **At a table**

1. The traveler places the cane under the table either parallel or diagonal to its length.
  - Again, he may find it helpful to keep one foot on the cane and/or place the crook (if there is one) around the leg of the table. This prevents the cane from rolling and makes it easier to locate later.

### **In a restaurant booth**

1. The traveler places the cane tip on the floor between his foot and the wall. He lets the shaft rest between the seat and the wall.

### **In an automobile**

The automobiles referred to here include cars, vans, pickup trucks, etc.

1. The traveler brings the cane into the automobile, placing the tip on the floorboard between his foot and the near door.
2. He places the shaft over his shoulder.
  - Alternatively, he lets the shaft rest between the seat and the closed door (when seated in the front seat or the back seat of a four-door auto) or over the seat back next to the closed door (when seated in the back of a two-door auto).

### **In other motorized vehicles**

Other motorized vehicles include touring buses, trains, and airplanes.

1. The traveler places the cane tip on the floor between his foot and the car wall.

**Note:** If the traveler is not seated against an interior wall—e.g., if she is seated next to another passenger and/or the aisle—then she should:

- Fold up the cane.
- Hold the cane as described in the section "When Seated for a Short Time."

## When Standing

1. The traveler holds the cane vertically next to his body, with the tip on the ground. He can do either of the following:
  - He can hold the shaft with his hand.
  - Alternatively, he can rest the shaft against his trunk and hold it securely with his forearm.

## Other Storage Options

1. The traveler can place the cane vertically in a corner or against a wall, or he can lean it against a stationary object. As an additional option, he can lay the cane on the floor along a wall, when circumstances allow.

**Note:** Hanging a cane by its elastic cord is generally not recommended, because the cord can stretch and lose its elasticity.

## Folding and Telescoping Canes

Folding and telescoping canes can be stored easily in cane holders attached to a belt; in purses, briefcases, and tote bags; on shelves; and under seats.

### Folding Canes

#### To fold

1. The traveler holds the cane vertically and places his hands on either side of the top joint.
  - Holding the cane vertically while folding it prevents the cane from interfering with other people.
2. He gently and smoothly pulls the sections apart, folding the top section down parallel to the second section and repeating this procedure for each succeeding section.
  - The traveler must be sure to hold the sections securely after folding so they will not spring back into the unfolded position.
3. After folding the entire cane, the traveler secures it by stretching the elastic cord the length of the folded cane and slipping the small loop over the end of the bundled sections.

**Note:** For a couple of reasons, it is recommended that the cane be folded only when absolutely necessary.

- A folded cane is not ready for use if needed quickly.
- Repeated folding and unfolding can cause wear and tear on the joints and the elastic cord.

### **To unfold**

1. Holding the sections of the cane securely together, the traveler releases the cord that is holding the bundled sections together.
2. The traveler holds the folded cane vertically (at the height of the extended cane), and gently releases his grip on all but the top section. The cane snaps into place.
  - The traveler must be sure that no one is near enough to be hit by the cane as it unfolds.

Alternatively, the traveler can unfold the cane section-by-section, beginning at the top.

- This method best ensures that the cane will not accidentally hit someone while snapping into place.

### **Telescoping canes**

#### **To fold**

1. The traveler holds the cane vertically and rotates the lock at each joint to release it. Some canes will not have locks at each section.
2. He collapses each section into the one above it, beginning with the top two sections.

#### **To unfold**

1. The traveler rotates the bottom of the cane, if needed, to unlock the sections. He then holds the cane vertically (at the height of the extended cane) and lets the sections drop into place.
2. The traveler rotates the lock at each section (if necessary) to secure the sections in place.

## **Notes for Teachers**

It is important to teach cane-handling and cane-placement skills early in the course of cane instruction. This includes the importance of positioning the cane properly so that it is easily retrieved, ready for use, and out of the way of other people. If the traveler stores the cane out of immediate reach, it is important to identify landmarks that enable easy cane location and retrieval.

## **Related Techniques**

Automobile Travel  
City Bus Travel  
Seating  
Subway Travel

# MEASURING THE LONG CANE

## Purpose

To determine the proper cane length for optimum safety, efficiency, and performance of all techniques that involve the use of the long cane

The cane should be long enough to detect obstacles far enough in advance to allow the traveler time to react and to avoid unwanted body contact with an object. At the same time, however, the cane should not be so long that it interferes with pedestrians or detects obstacles outside of the travel path.

## Measuring Environments

Begin in an open area with level ground and a straight path for the traveler to follow. Floor surfaces with a repeating pattern (e.g., a checkerboard) and sidewalks provide visual markers to use in comparing the location of the cane tip as it contacts the walking surface and the placement of the foot in the following step.

When it is necessary to visually assess cane length in an environment without natural landmarks, it may be possible to pick out lines normally occurring in the environment (e.g., expansion cracks between sidewalk sections) and use them to determine if the student is either over- or under-stepping the cane. Final adjustments to cane length may be made based on these observations.

Alternatively, it may be possible to securely tape a piece of chalk to the cane tip. As the traveler walks using the TOUCH (Constant Contact) technique, the chalk will leave a mark on the path. This mark can be used to determine where the traveler's foot lands in relation to where the cane tip contacted the ground.

Progress to complex environments with obstacles that the traveler will detect with the cane. Note whether or not the traveler has sufficient time to react at all anticipated walking speeds when the cane contacts an obstacle.

## Determining Proper Cane Length

At a normal walking pace, the cane tip should contact the ground where the ball of the traveler's foot will land next.

- If the cane is too long, it will contact objects too soon, it will contact items unnecessarily, and it may be more difficult to store and maneuver. Research has also shown that if the cane is too long, it can make detection of drop-offs less reliable (Kim, Wall Emerson, & Naghshineh, 2017).
- If the cane is too short, the traveler will overstep where the cane contacts the ground and may walk into obstacles or hazards.

Often, a cane is first measured for a traveler before he or she has learned independent cane techniques. In this case, it is necessary to initially estimate the proper length based on the traveler's height. Here are the steps to do this:

1. The O&M specialist holds the cane vertically in front of the traveler's body while the traveler stands straight and still. The O&M specialist holds the cane with the crook or top end of the shaft touching the ground.
2. The O&M specialist marks the initial length of the cane at the height of any number of body landmarks. Landmarks often used include (a) a point approximately 2 inches above the bottom of the sternum (breastbone), or (b) at the base of the traveler's armpit (Jacobson, 2013). Other commonly used landmarks include the top of the traveler's sternum, the bottom of his or her chin, or, in some cases, even the top of his or her head. The initial length chosen is often determined by the traveler's anticipated walking speed, reaction time, and personal preference for cane length. An important consideration here is that the cane length, at any time during a traveler's program, must be sufficiently long to enable optimum detection of obstacles and to allow safe travel at any speed a traveler should choose to walk.

Some O&M specialists find it best to measure the cane slightly longer than necessary, reasoning that it can be cut shorter as the traveler's reaction time and skills develop. If this length should turn out to be too long, it is easy to cut the length at a later date. If, however, a longer cane is needed later, a new cane must be issued.

And yet some travelers will learn best by initially using a cane that matches their stride and reaction time. They can later change to a longer cane if their walking speed increases over the course of instruction.

## Notes for Teachers

The length of the cane can vary at different times in training, depending upon the traveler's confidence and ability to use proper cane techniques. For example, the cane may get longer as the traveler gets more confident and moves faster in the environment. Conversely, it can get shorter as the traveler gains efficiency and reliability in reacting to obstacles and hazards that the cane detects. It is often found that the cane length that is most appropriate during the initial stages of instruction is different from the cane length that the traveler uses by the completion of instruction.

## References

- Kim, D. S., Wall Emerson, R., & Naghshineh, K. (2017). Effect of cane length and swing arc width on drop-off and obstacle detection with the long cane. *British Journal of Visual Impairment*, 35(3), 217-231. <https://doi.org/10.1177/0264619617700936>
- Jacobson, W. (2013). *The art and science of teaching O&M to persons with visual impairments* (2nd Ed). New York: American Foundation for the Blind.

# **APPENDIX C**

## **GLOSSARY**

### **Accessible pedestrian signal (APS)**

A device that communicates information about pedestrian timing in non-visual formats, such as audible tones, verbal messages, and/or vibrating surfaces.

### **Align**

To position one's body in relation to an object or sound to establish a line of direction and a definite position in the environment

### **Alignment**

See "Align."

### **Parallel alignment**

Placing the body next to an object or sound so as to establish a travel path parallel to the direction of a stationary object or path of a moving object, as determined by the sound that it makes

### **Perpendicular alignment**

Placing the body next to an object or sound so as to establish a travel path perpendicular to the direction of a stationary object or path of a moving object, as determined by the sound that it makes

### **All-Clear**

The absence of moving or idling vehicles on either street and the absence of any masking sounds

### **Anchor**

To firmly secure one's cane against an object so that the cane does not move as one approaches the object

### **Arc**

Pattern made by the cane tip when moved left and right in the process of clearing or in the performance of the TOUCH technique or related cane techniques

## **Arm-pull**

This is a signal given by the guide to bring the traveler forward alongside him (e.g., before beginning to walk down a stairway, before entering a row of theater seats). The guide pulls his arm forward until the traveler is beside him, and then he tenses his arm to prevent the traveler from stepping too far forward.

## **Audible beacon**

An audible tone that is used in conjunction with accessible pedestrian signals in order to provide directional information to assist travelers in locating the destination corner

## **Bilateral**

Affecting or involving both the left and right sides of the body

## **Blended curb**

This is the intersection of a sidewalk and street where the surfaces of the two meet at the same level. The sidewalk is not at an elevation above the curb, nor is there a descending ramp connecting a higher sidewalk and a lower street surface. Blended curbs were originally designed to remove architectural barriers for wheelchair users.

## **Camber**

A slight rise in the middle of the street, designed to allow rain to run downward toward the drains in the gutter

## **Cane (long)**

Instrument used by travelers who have visual impairments for the purpose of object-, obstacle-, and hazard-detection

### **Crook**

Curved section of the cane above the grip (present on only some cane models)

### **Grip**

Top portion of the cane that is held by the traveler

### **Shaft**

Long tubular section of the cane, i.e., the body of the cane

### **Tip**

This is the bottom section of the cane—the part that contacts the ground. Tips are available in varying sizes, shapes, and materials. Some sample cane tips are shown in Figure 1.





**Figure 1**  
Cane Tips (from left to right: marshmallow, ball, pencil, and glide)

## **Cane hand or arm**

Hand or arm that holds and controls the long cane

## **Channelized island**

Often adjacent to channelized right-turn lanes, this triangular-shaped island may be raised or indicated by painted markings on the street.

## **Clear (clearing)**

To feel the ground with the long cane in order to detect any obstacles that may be in the travel path, or to feel a surface (e.g., a chair) with one's hand in order to detect any objects that might be in the way

## **Congested area**

An area in which there are numerous people and/or obstacles around which the traveler must maneuver to continue on his travel path

## **Continuity of movement**

Uninterrupted movement in travel (e.g., walking without stopping or pausing)

## **Controlled environment**

Environment in which the presence and/or location of objects cannot change without prior knowledge of the traveler

## **Corner**

### **Start**

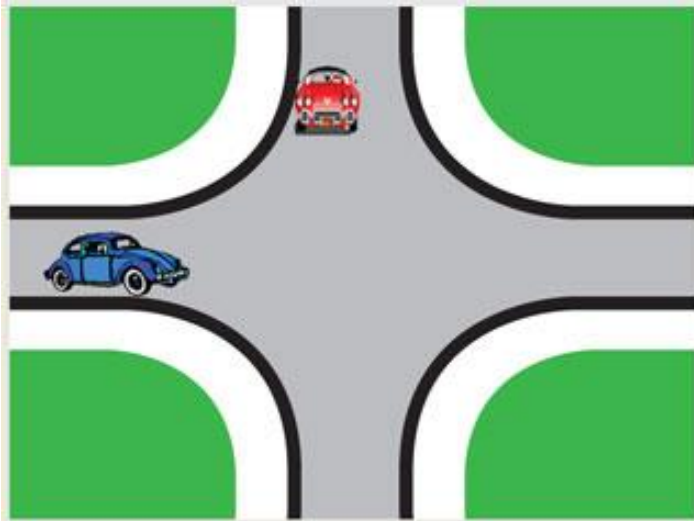
The corner from which the traveler starts when crossing the street

### **Destination**

The corner at which the traveler arrives after crossing the street

### **Rounded**

A type of corner in which a curved radius connects the curbs of the parallel and perpendicular streets (as shown in Figure 2)

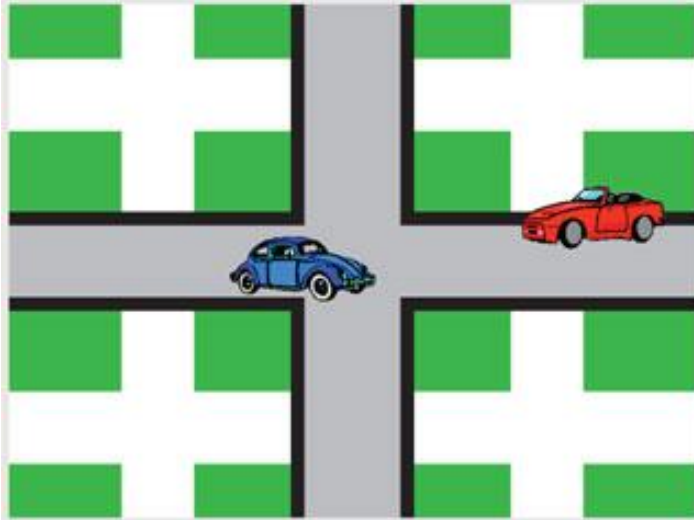


**Figure 2**

Rounded corners

### **Square**

A type of corner in which the curbs of the parallel and perpendicular streets meet at a 90-degree angle (as shown in Figure 3)



**Figure 3**  
Square corners

## **Crown**

The highest point in the camber of a street, generally located at the center point of the street

## **Curb ramp**

This is the portion of the sidewalk that lowers gradually from its present elevation to the elevation of the street as it nears the corner. Curb ramps were originally designed to remove architectural barriers for wheelchair users.

## **Detectable warnings**

Most commonly applied to such locations as the edges of subway platforms, curb ramps, and blended curbs, detectable warnings are tactually detectable surface features that are either built in or applied to walking surfaces or other elements to warn of hazards. They are intended to function much like a stop sign and to alert pedestrians who are visually impaired to the presence of a hazard in the line of travel.

## **Direction of travel**

The direction in which the traveler moves when traveling forward without turning

## **Door**

### **Automatic**

A door equipped with a power-operated mechanism that opens it when a controller receives an activation signal from a specially designated, manually operated push plate or from a special sensor (e.g., photoelectric device, floor mat) that indicates the presence of a person standing in front of the door

## **Manual-closing**

Designed to remain open unless closed intentionally, this door is usually located in the interior of a building.

## **Pull**

A door that is opened by pulling on a door handle

## **Push**

A door that is opened by pushing on a bar, plate, or handle

## **Spring-loaded**

Designed to close automatically unless held open, this door is usually found in public buildings.

## **Stile**

This is the vertical border on the face of a door. Along with rails (horizontal elements), stiles form the outside vertical border of doors and are most visible on doors that have inset glass or wood panels (see Figure 4). For the purposes of this curriculum, a hand-span-wide vertical strip on the face of flat doors (i.e., along the facing edge) will also be considered a stile.



**Figure 4**

Blue arrows point to two door stiles, indicated by blue lines

## **Extra arc**

This is a method for attracting the attention of drivers who might move on the perpendicular street or make a turn from the parallel street onto the perpendicular street directly in front of the traveler. The traveler taps the cane three times in a normal arc pattern, stepping off the curb with the third tap if it is clear.

## **Focal point**

A primary landmark used for orientation or reorientation, the focal point often is used to mark the beginning point of a search pattern.

## **Free arm**

The traveler's arm that is not being used to hold a guide's arm or a long cane

## **Grasp**

### **Handshake grasp (aka, index-finger grasp)**

A method of holding the cane in which the traveler's forefinger lays flat alongside the cane grip, pointing downward, and where the remaining fingers and the thumb encircle the cane grip (as shown in Figure 5)



**Figure 5**

Cane held using the handshake grasp

### **Pencil grasp**

A method of holding the cane in which the cane grip rests in the base of the web of the traveler's thumb and forefinger and where her remaining fingers are flexed and her middle finger is supporting the weight of the cane (as shown in Figure 6)



**Figure 6**  
Cane held using the pencil grasp

### **Thumb grasp**

A method of holding the cane in which the fingers are flexed around the grip and the thumb is extended down the side of the grip (on the flat edge of the grip, if there is one, as shown in Figure 7)



**Figure 7**  
Cane held using the thumb grasp

### **Grasp arm**

The arm that the traveler is using to grasp the guide's arm

### **Grasped arm**

The arm of the traveler that is being grasped by another person

## **Guiding arm**

The arm of the guide that the traveler is grasping

## **Guy wire**

This metal wire used to aid stability in some tall structures (e.g., utility poles) is attached near the top of the structure on one end and into the ground several feet from the structure at the other end.

## **Hazard**

Object in the environment that cannot be detected by the traveler prior to making body contact (e.g., hanging objects that the long cane cannot detect)

## **In-step**

Coordination between foot placement and cane motion when performing the TOUCH technique and related cane techniques

## **Indenting**

Turning the corner into an intersecting hallway or pathway before crossing it. This is done as part of such techniques as TRAVERSING OPEN SPACES and Areas Without Sidewalks (Crossing a Street).

## **Intersection shapes**

### **Four-leg-right-angle**

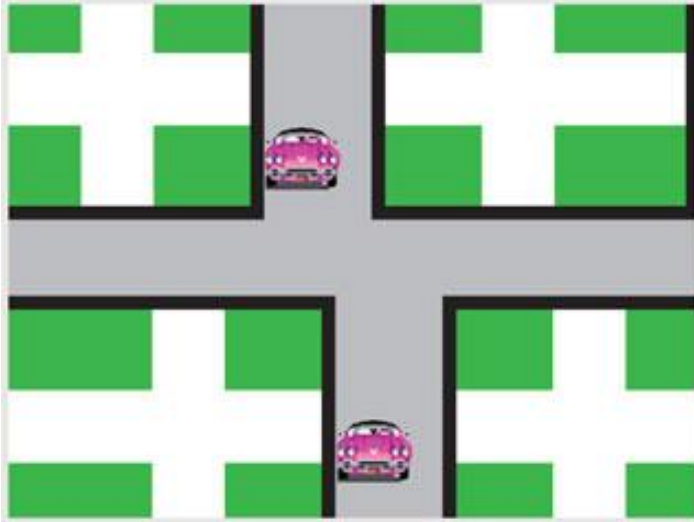
An intersection at which two streets cross at a 90-degree angle to each other (aka, plus-shaped)

### **Four-way**

An intersection at which traffic can approach from any of four directions

### **Offset**

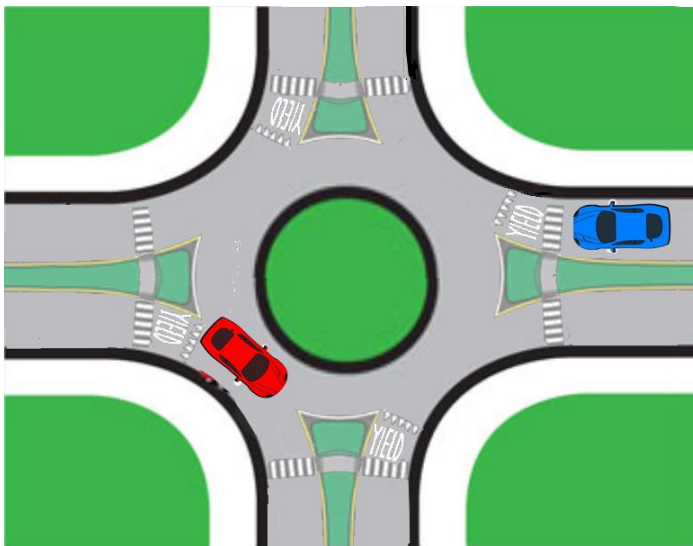
An intersection at which the continuation of the street beyond the intersection is displaced laterally from the approach section of that street (see Figure 8).



**Figure 8**  
Offset intersection

### Roundabout

This is a junction of two or more streets at which there is a center circle through which vehicles may not pass. Traffic enters the junction, flows in a path around the circumference of the circle, and then exits on any of the intersecting streets. There are clearly defined crosswalks with a splitter/refuge island between lanes (see Figure 9).

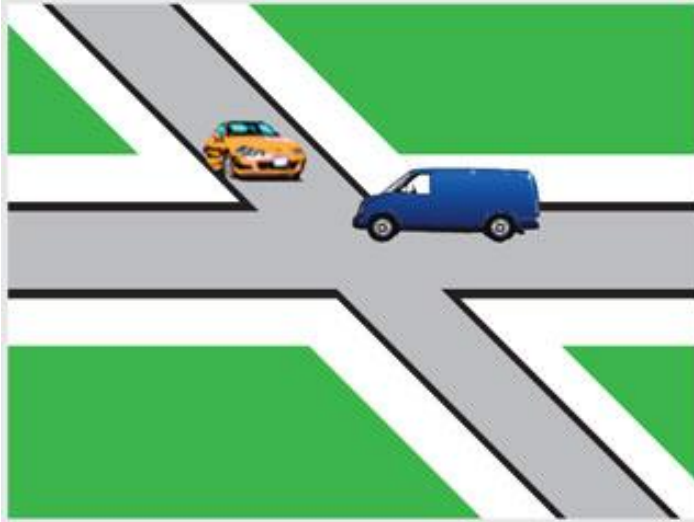


**Figure 9**  
Roundabout intersection

### Skewed

An intersection at which two streets cross at other than a 90-degree angle to each other (as shown in Figure 10)

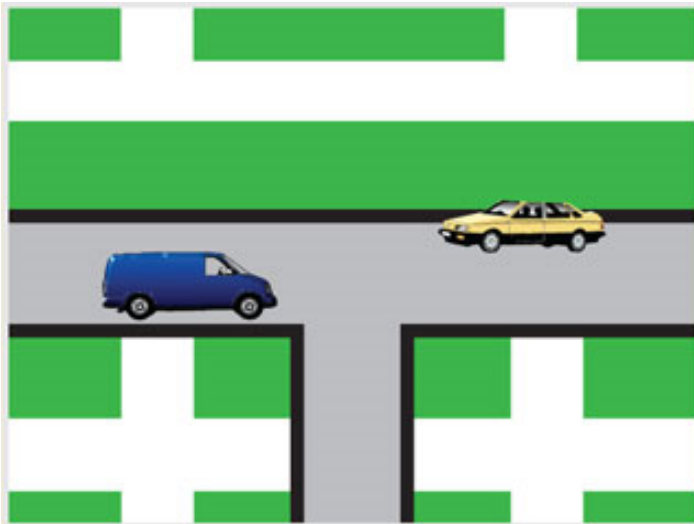




**Figure 10**  
Skewed intersection

### **"T"**

An intersection at which two streets meet, forming the configuration of the capital letter "T" (as shown in Figure 11)



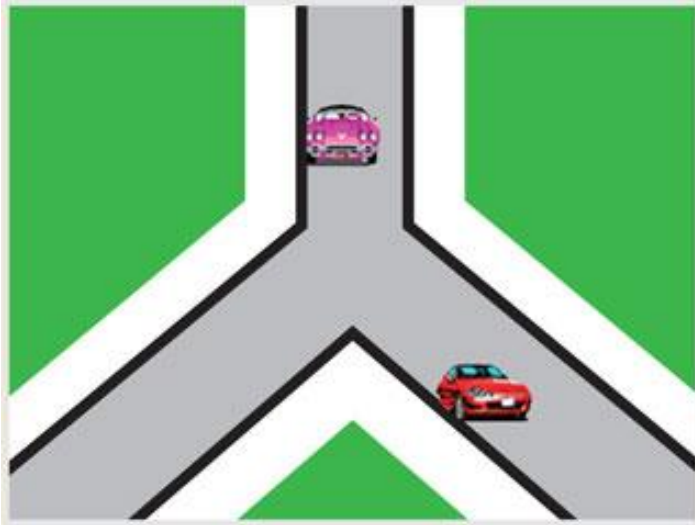
**Figure 11**  
T intersection

### **Three-way**

An intersection at which traffic can approach from any of three directions

## **“Y”**

This is a type of intersection at which streets meet, forming the configuration of the capital letter “Y” (or an inverted “Y”). Traffic can approach from any of three directions (see Figure 12).



**Figure 12**  
Y intersection

## **Leading foot**

The traveler's foot that is placed slightly ahead of the other when waiting to step off a curb, exit an escalator, etc.

## **Line of travel**

Direction of travel in which one is positioned to move or in which one is moving

## **Masking sound**

A sound that blocks out or interferes with the reception of a desired sound

## **Median strip**

This raised (or sometimes painted) section of the street that separates traffic moving in opposite directions. It may be made of concrete or dirt, or it may have signs, poles, or even grass or other plants on it. If the median strip is raised, then a cement curb usually borders it.

## **Midline**

The imaginary line that divides the body into equal left and right halves

## **Non-cane hand/arm**

The hand or arm opposite the one that is holding and controlling the cane

## **Non-grasp/ed hand or arm**

The hand or arm opposite the grasp or grasped arm

## **Objective**

A term used in mobility to indicate a destination to which one is traveling

## **Obstacle**

Object in the environment that blocks the travel path

## **Out-of-step**

Lack of coordination between foot placement and cane motion when performing the TOUCH technique and related cane techniques

## **Parkway**

This strip of land, which is located between the sidewalk and the street, may be planted with grass, trees, or shrubs, or may be covered in decorative stones or other materials. It is referred to by a variety of names, depending on where in the U.S. or in which country a person lives.

## **Pedestrian phase**

The total time allocated for the pedestrian to cross the street (the combination of the pedestrian walk interval plus the pedestrian clearance interval)

## **Perpendicular**

A relationship between two or more lines or surfaces such that they extend in directions that form a right angle (90 degrees) to one another.

## **Railroad (including light rail systems)**

### **Pedestrian-automated gate**

This counterweighted bar or pole is designed to prevent pedestrians from crossing the tracks when a train is approaching. This is a shorter version of the vehicle-automated gate. When a train is not approaching, the bar is positioned vertically; it pivots over the walkway when a train is approaching. A flashing-light signal assembly with an audible warning bell is usually present when the gate lowers across the walkway.

### **Vehicle-automated gate**

Also known as a "boom gate," it consists of a counterweighted bar or pole designed to prevent vehicles from crossing the tracks when a train is approaching. When it is clear,

the bar is positioned vertically; it pivots over the roadway when a train is approaching. Some bars cover the roadway and the pedestrian walkway, while others cover only the roadway. In the latter case, an additional pedestrian gate may or may not be present. A flashing-light signal assembly with an audible warning sound is usually present when the gate lowers across the roadway (see Figure 13).



**Figure 13**  
Vehicle and pedestrian railroad-crossing gates

## Reference point

A fixed point within an environment that is used to establish or apply an orientation or reference system

## Right-of-way law

The set of laws that govern which vehicle has the right-of-way in various traffic situations, such as when entering an intersection or a roundabout

## Shoreline

Border or edge of a sidewalk, grass line, or any continuous point of reference that can be followed or used to establish a line of direction.

### Inside shoreline

The edge of the sidewalk farthest away from the street

### Outside shoreline

The edge of the sidewalk closest to the street

## Sidewalk

This cement pathway usually parallels the street and is often referred to as the “public sidewalk.”

## Signalized intersection

An intersection at which traffic patterns are controlled by traffic lights displaying red, yellow, and green signals

## Stairs

### Depth

The front-to-back dimension of each stair

### Height

The vertical distance from one stair to the next

### Nosing

The usually rounded horizontal edge on the front of a stair that extends over the riser (see Figure 14).

### Riser

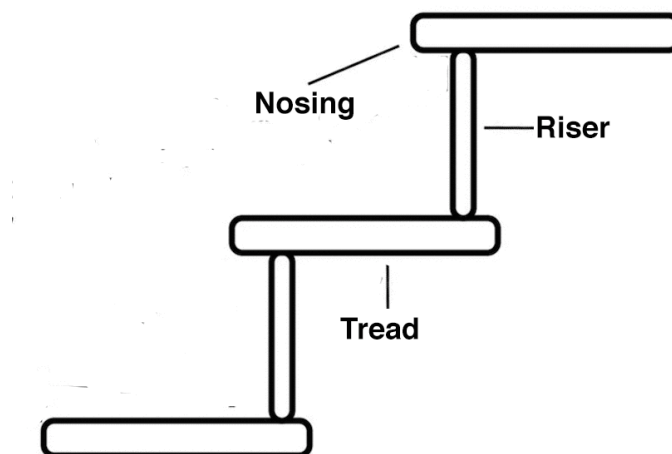
The vertical surface between steps (see Figure 14).

### Tread

The horizontal surface upon which a traveler steps (see Figure 14).

### Width

The side-to-side dimension of each stair



**Figure 14**

Diagram of stairs, with labels for tread, riser, and nosing

## **Stanchion**

An upright bar, post, or frame forming a support or barrier.

## **Street**

### **Parallel**

A street on which traffic moves in a direction that is parallel to the movement or projected movement of the traveler

### **Perpendicular**

A street on which traffic moves in a direction that is perpendicular to the movement or projected movement of the traveler

## **Surge**

The forward movement of vehicles as they begin to accelerate simultaneously from a stopped position at an intersection (i.e., as a red light turns green).

## **Traffic lanes**

### **Channelized right-turn lane**

A dedicated lane located at signalized intersections where there is typically a large volume of vehicles making right-hand turns from one street onto the other. The channelized lane is separated from other traffic lanes by a "channelized island."

### **Curb lane**

The lane of the street that is immediately adjacent to the curb and in which traffic is allowed to move

### **Far-parallel**

Lane/s on the parallel street farthest from the traveler (as shown in Figure 15)

### **Far-perpendicular**

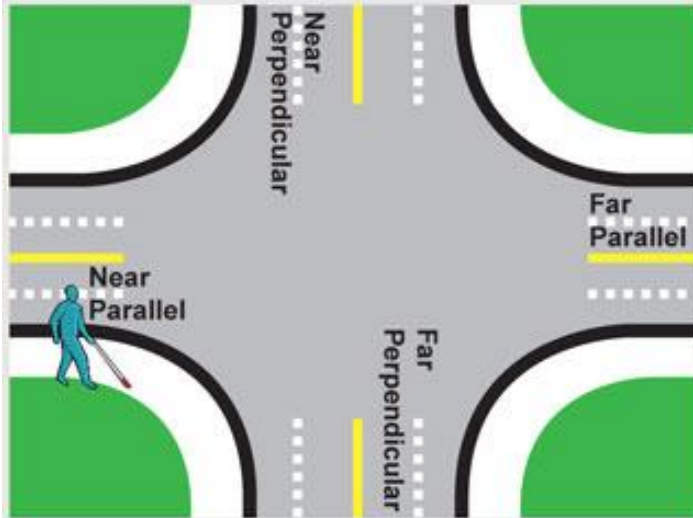
Lane/s on the perpendicular street farthest from the traveler (as shown in Figure 15)

### **Near-parallel**

Lane/s on the parallel street nearest to the traveler (as shown in Figure 15)

### **Near-perpendicular**

Lane/s on the perpendicular street nearest to the traveler (as shown in Figure 15)



**Figure 15**  
Parallel and perpendicular traffic lanes

## Traffic signals

### General types

#### Actuated

This type of traffic signal uses detectors located in the pavement on the approaches to a signalized intersection. They are used in order to monitor traffic volume and assign time intervals for right-of-way based on traffic flow.

#### Fixed-time (or pre-timed)

Traffic signals that assign a fixed-time interval to each traffic-signal phase, regardless of traffic demand

#### Semi-actuated

This type of traffic signal is found at intersections at which only the minor street has sensors or detectors to trigger a change of phase. The major street typically has a green light until a car waiting on the minor street triggers a change in the signal. The light will change just long enough for the cars grouped together on the minor street to turn onto or cross the major street, up to a preset maximum timing. Depending on the amount of traffic present on the minor street, there may or may not be sufficient time for a traveler to cross the street safely before the signal changes.

## Signals, Cycle, Phases, and Intervals

### Cycle

The amount of time required for one complete sequence of signal phases

### DON'T WALK interval

See "pedestrian clearance interval."

### **Exclusive pedestrian phase**

Also referred to as the “scramble phase,” this traffic-signal phase is generally used in large downtown areas with large concentrations of pedestrian traffic. During this phase, all vehicular traffic stops and allows pedestrians to cross in any direction at the intersection, including diagonally.

### **Interval**

The portion of the signal cycle during which a signal remains unchanged

### **Pedestrian button**

A specialized button at a signalized intersection that, when pushed, alerts the signal controller that a person is waiting to cross the street. The controller, in turn, will adjust the timing of the signals to allow the person sufficient time to cross the street (see “pedestrian signal”).

### **Pedestrian clearance interval**

This is the segment of time at a signalized intersection in which there remains time for pedestrians already in the street to complete their crossing but insufficient time to begin a crossing. This interval is usually denoted by a flashing “Don’t Walk” sign or an orange hand-shaped image on the “pedhead” or by the cessation of any audible sounds and tactile vibrations from accessible pedestrian signal devices. This is also called a “pedestrian change interval.”

### **Pedestrian countdown signal**

A display connected to traffic signals or a “pedhead” that shows the number of seconds left in the pedestrian clearance interval

### **Pedestrian head (“pedhead”)**

This lighted sign, usually in a square box, is attached to a traffic signal and is usually located immediately below the green light or arrow. The pedhead will display either words or symbols to indicate to pedestrians whether or not the controller has set the timing of the signals to allow the pedestrian sufficient time to cross the perpendicular street before traffic is allowed to move on that street.

### **Pedestrian head-start phasing**

Also known as “pedestrian lead-in phasing,” it provides a walk phase for pedestrians prior to providing parallel vehicle traffic with a green light. All directions of traffic see a brief all-red phase during this time. It is used primarily at intersections with heavy combinations of pedestrian traffic and turning vehicles.



## **Pedestrian signal**

This specialized device is frequently installed on corners at signalized intersections to alter traffic flow to allow pedestrians to cross the street. It also may be located on median strips for use by pedestrians who are unable to cross the entire street before the end of the pedestrian clearance interval. Pushing the pedestrian button, located on a post at the start corner, either causes the signal to change to allow crossing and/or extends the length of the pedestrian interval in the next cycle. An accessible pedestrian signal is one that provides an auditory/tactile indication that the pedestrian phase has begun. An accessible pedestrian signal is designed for use by people who have visual impairments or who are deafblind.

## **Pedestrian WALK interval**

This is the segment of time at a signalized intersection during which there remains sufficient time for a traveler to step off the curb and complete the crossing before the traffic phase changes. This interval is usually denoted by a steady white sign on the pedhead displaying either the word "Walk" or a white figure of a person walking. If accessible pedestrian signal devices are present and activated, they will be emitting audible sounds and/or tactile vibrations during this interval.

## **Phase**

The portion of a cycle during which any combination of one or more traffic movements simultaneously receive the right of way during one or more intervals

## **Rest-in-Walk**

The situation in which the pedestrian signal to cross the minor street continually indicates a pedestrian walk interval, unless a vehicle on the minor street approaches the intersection or the pedestrian button is pressed to cross the major street

## **Vehicular clearance interval**

The interval at a signalized intersection in which there is a combination of a yellow change interval and a brief interval of time during which all vehicular signals are red before the signal changes to the next interval.

## **WALK interval**

See "pedestrian walk interval."

## **Traffic (types of)**

### **Far-parallel**

Traffic moving on the parallel street in the lane/s farthest from the traveler

### **Far-perpendicular**

Traffic moving on the perpendicular street in the lane/s farthest from the traveler

### **Near-parallel**

Traffic moving on the parallel street in the lane/s nearest to the traveler

### **Near-perpendicular**

Traffic moving on the perpendicular street in the lane/s nearest to the traveler

### **Oncoming**

Traffic that moves in a direction opposite to the movement or projected movement of the traveler

### **Parallel**

Traffic that moves in a direction that is parallel to the movement or projected movement of the traveler

### **Perpendicular**

Traffic that moves in a direction that is perpendicular to the movement or projected movement of the traveler

### **Same-direction**

Traffic that moves in the same direction as the movement or projected movement of the traveler

### **Through**

Traffic that moves straight through an intersection without turning

### **Trailing**

Using a long cane or one's hand to follow a straight surface (i.e., walls, lockers, desks, tables, etc.) or using a guide's back for a number of purposes: (a) determining one's place in space, (b) locating specific objects or the guide's arm, and (c) maintaining a straight and parallel line of travel

### **Trailing foot**

The traveler's foot that is placed slightly behind the other when waiting to step off a curb, exit an escalator, etc.

### **Traverse**

To cross an open area without following the shoreline (e.g., parkway, room, or hallway)

### **Uncontrolled environment**

Environment in which the presence and/or location of objects may change without prior knowledge of the traveler

## **Unsignalized intersection**

Intersections at which traffic patterns are not controlled by traffic lights displaying red, yellow, and green signals

## **Veer**

To drift off course or unintentionally change one's direction of travel

## **Walkway**

Pathway that leads from the public sidewalk to a specific building or location

## **White Cane Laws**

These laws are included in the Uniform Vehicle Code of most states. They state that the driver of a vehicle shall not approach a crosswalk or any other pedestrian crossing without taking all necessary precautions to avoid accident or injury to a blind pedestrian who is carrying a cane or using a guide dog. (**Note:** the exact wording and specifications vary from state to state.)

# **APPENDIX D**

## **VIDEO AND OTHER CREDITS**

### **Project Director**

Sandra Rosen

### **Project Manager**

Kevin Kelly

### **Media Specialist**

Joseph Churchill

### **Media Consultant**

Seanchan Owen

### **Directors of Photography**

John Antonelli

Mill Valley Film Group

Rick Tessman

McLean Media

### **Videographer**

Jerry Jones

### **Audio Technicians**

Will Parrinello, Gerry Berkowitz

Mill Valley Film Group

Jean Jacques Chaltiel

Peter White, Jim Smith

Versatile Video

### **Online Video Editors**

Greg Berg, Rhys Ludlow

Videotracs Post

### **Offline Video Editors**

John Antonelli, Will Parrinello

Mill Valley Film Group

## **Production Assistants**

Miriam Emmanuel, Marlene Lowry  
Dennis Mink, Michele Moore, O'Neil Provost

## **Actors**

Joaquin Aranda, Karl Baker, Michele Germany  
Sharon Hudson, Alec Karp, Alice Rose  
Christina Bollengier, Carlos Winborn

## **Extras**

John Antonelli, Gabriel Aranda, Geof Bell  
Dorothy Durkee, Thuto Durkee, Anthony Fletcher  
Eric Germany, Rasan Gray, Rebecca Haycox  
Erica Hogle, Elizabeth Hom, Neesa Johnson  
Rosanne Liggett, Marlene Lowry, Mert Mertcan  
Dennis Mink, Michele Moore, Brett Oppenheim  
Will Parrinello, O'Neil Provost, Sandra Rosen  
Linda Tabor-Beck, Simon Tarlen, Caleb van Docto  
Bill Wisner

## **Special Thanks**

Alameda County Transportation Authority  
Bay Area Rapid Transit (BART)  
Stonestown Galleria  
Bill Bryan  
Jane Cavagnaro-Unger  
Faith Dunham-Sims  
Diane Fazzi, Ph.D.  
Erin Foley  
Bill Jacobson, Ed.D.  
Gil Johnson  
Robert LaDuke, Ph.D.  
Jim Leja  
Linder Myers  
Nancy Mitchner  
Dona Sauerburger  
Wendy Scheffers  
Cris Jaye Shupin  
Annette Skellenger, Ph.D.  
Mary-Maureen Snook-Atkins, Ph.D.  
Cath Tendler

# **APPENDIX E**

## **MODULES IN THE STEP-BY-STEP SERIES**

### **Guiding Techniques**

#### **When the Traveler Is Not Carrying a Cane**

- Basic Guiding
- Negotiating Narrow Spaces
- Reversing Direction
- Transferring Sides
- Negotiating Doors
- Negotiating Stairs

#### **When the Traveler Is Carrying a Cane**

- Basic Guiding
- Negotiating Narrow Spaces
- Reversing Direction
- Transferring Sides
- Negotiating Doors
- Negotiating Stairs

### **Non-Cane Techniques**

#### **Self-Protective**

- Lower Hand & Forearm
- Upper Hand & Forearm

#### **Directional**

- Trailing
- Direction-Taking (Tactile)
- Traversing Open Spaces

### **Long Cane Techniques**

#### **Detection**

- Diagonal
- Touch
- Congested Area
- Touch & Slide

## **Shorelining**

Diagonal Trailing  
Touch & Drag  
Touch Trailing  
Three-Point

## **Negotiating Doors and Stairs**

Negotiating Doors  
Negotiating Stairs

## **Special Situations**

Sidewalk Recovery  
Obstacle in the Travel Path  
Vehicle in the Travel Path

# **Street Crossing Techniques**

## **Approach**

Intersection Approach

## **Alignment**

Street-Crossing Alignment

## **Executing Crossings**

Basic Crossing

## **Timing**

Unsignalized Intersections  
Signalized Intersections

## **Special Situations**

Vehicle in the Crosswalk  
Negotiating a Median Strip

# **Environment-Specific Techniques**

## **Elevators, Escalators, & Revolving Doors**

Elevators  
Escalators—With a Guide (When the Traveler Is Not Carrying a Cane)  
Escalators—With a Guide (When the Traveler Is Carrying a Cane)  
Escalators

## **Special Environments**

Areas Without Sidewalks

Gas Stations

Railroad Crossings

## **Special Techniques**

### **Exploration & Seating**

Search Patterns

Locating Dropped Objects

Contacting & Exploring Objects

Seating

### **Handling Unsolicited Assistance**

When the Traveler Is Not Carrying a Cane

When the Traveler Is Carrying a Cane

## **Transportation Techniques**

### **Automobile Travel**

### **City Bus Travel**

### **Subway Travel**



American Printing House for the Blind, Inc.  
1839 Frankfort Avenue  
P.O. Box 6085  
Louisville, Kentucky 40206-0085  
Phone: 502-895-2405  
Toll Free: 800-223-1839  
Fax: 502-899-2274  
Email: [info@aph.org](mailto:info@aph.org)  
Website: [www.aph.org](http://www.aph.org)

**Step-By-Step, 2nd Ed.  
Introduction and Appendices**

Copyright © 2021

Catalog Number  
8-75981-00  
8-75982-00